

REMARKS

This is in complete response to the Office Action of May 26, 2010. Applicant requests further examination, and reconsideration and withdrawal of all outstanding rejections in view of the foregoing amendments and the following remarks.

To more particularly point out and distinctly claim that which applicants believe to be their invention, applicants have amended the claims. Specifically, the claims have been amended to recite:

- a) the size of the first part (inorganic material A, e.g., silica) is between 50 and 250 nm (see, e.g., claim 39); and
- b) the dissymmetric particle is produced by bringing into contact in a solvent the first part having coupling agents attached thereto with a precursor of the second part (such as a monomer or an oligomer of the polymer B constituting the second part) in proportions that allow the formation of a single substantially spherical nodule of the second part in the first part (see, e.g., claim 15).

The specified proportions are 1:1, and allow producing dissymmetric particles having only two parts, i.e., a single polymer nodule attached to a single particle. The ratio between the number of said first parts in the solvent and the number of said second parts to be formed in the solvent should therefore be close to 1. To achieve this ratio, the concentration and the size of the first part in the solvent are carefully controlled, as disclosed in the specification, e.g., at page 4, line 39 to page 5, line 6; and Example 1, page 13.

The table of Example 1 shows that the size and concentration of the silica particles are adjusted to specify a given number of silica particles in the solvent,

which should be as close as possible as the number of polymers to be formed so as to ensure that the above-mentioned ratio is close to 1, and therefore that dissymmetric particles as claimed are formed.

This invention is achieved by means of a first part (such as silica) having a relatively small size, i.e., between 50 to 250 nm. Indeed, very small inorganic particles (< 50 nm) may not attach a nodule of polymer; and very large inorganic particles (> 250 nm) may attach two nodules (as explained in the specification at page 5, lines 34-36).

Reculusa et al. report that raspberry-like particles may be obtained by means of large silica seeds (≥ 500 nm) previously surface-modified by the adsorption of macromonomer molecules.

In the examples disclosed by Reculusa et al., the number of polymer nodules in the solvent is 250 times higher than the number of silica particles to ensure that a maximum number of polymer nodules are attached to the surface of one silica particle. In these examples, the silica concentration is kept constant and the macromonomer concentration is adjusted in function of the silica size so as to saturate the silica surface.

Reculusa et al. fail to disclose the above-mentioned features a) and b) as are now required by claim 1.

Xia et al. disclose asymmetric dimers having micrometric scales.

Even if Xia et al. suggests using smaller dimensions, the combination of Reculusa et al. and Xia et al. would have led the skilled person to use particles having the smallest dimensions disclosed in Reculusa et al. and Xia et al., i.e., particles having a size of 500 nm. For this reason, the skilled person would not have

had a well reasoned basis for using particles of lesser size (between 50-250 nm) to produce dissymmetric particles.

Even if one skilled in the art would have interpreted Xia et al., or even Yadav et al., to find a well reasoned basis for reducing the size of the particles of Reculosa et al., the skilled worker would have not have had any basis for reproducing the dissymmetric particle as claimed, but rather the raspberry-like (symmetric) particles of considerably smaller size. As shown above, Reculosa et al. do not suggest adjusting the size and concentration of silica in the solvent to obtain a 1:1 ratio between the amount of silica and polymer, which is the only known way for producing the claimed particles.

The Office Action asserts that it would have been obvious that a single nodule can be added to a silica surface simply by adding only one macromonomer chain to the silica surface for polymerization. Applicants respectfully disagree.

First, it is not possible to ensure that a single macromonomer chain is added to the silica surface in a solvent comprising macromonomer chains and silica particles. Further, according to the invention, and as recited in claim 1, the surface of the first part (e.g., silica) is covered not only with one coupling agent, but rather with many coupling agents.

Reculosa et al. do not teach how to grow a single nodule of polymer on a first part (such as silica) carrying a plurality of coupling agents. This can be achieved only by the combination of features a) and b) above.

Xia et al. fail to disclose these features, and in particular feature b), according to which a plurality of first parts carrying coupling agents are mixed with a plurality of second parts in a single batch, and the size and the concentration of the first parts

are adjusted in function of the number of second parts to be formed so that the above-mentioned ratio is close to 1. On the contrary, Xia et al. teach welding a single silica particle onto a single PS head in a single hole, both particle and head being already formed before welding.

Even if the skilled person were to interpret Reculosa et al., Xia et al., and/or Yadav et al., individually or collectively, to suggest the use of smaller particles, the skilled person would not have arrived at the claimed particle since it is not suggested in these teachings how to obtain such a particle.

Applicants respectfully request reconsideration and withdrawal of all outstanding rejections.

Conclusion

For at least the reasons stated above, the Examiner is respectfully requested to reconsider and withdraw the outstanding rejections and objections, and to allow the present application.

In the event that there are any questions concerning this amendment, or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution of the application may be expedited.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date:

8/25/2010

By:


Brian P. O'Shaughnessy
Registration No. 32747

Customer No. 21839
703 836 6620